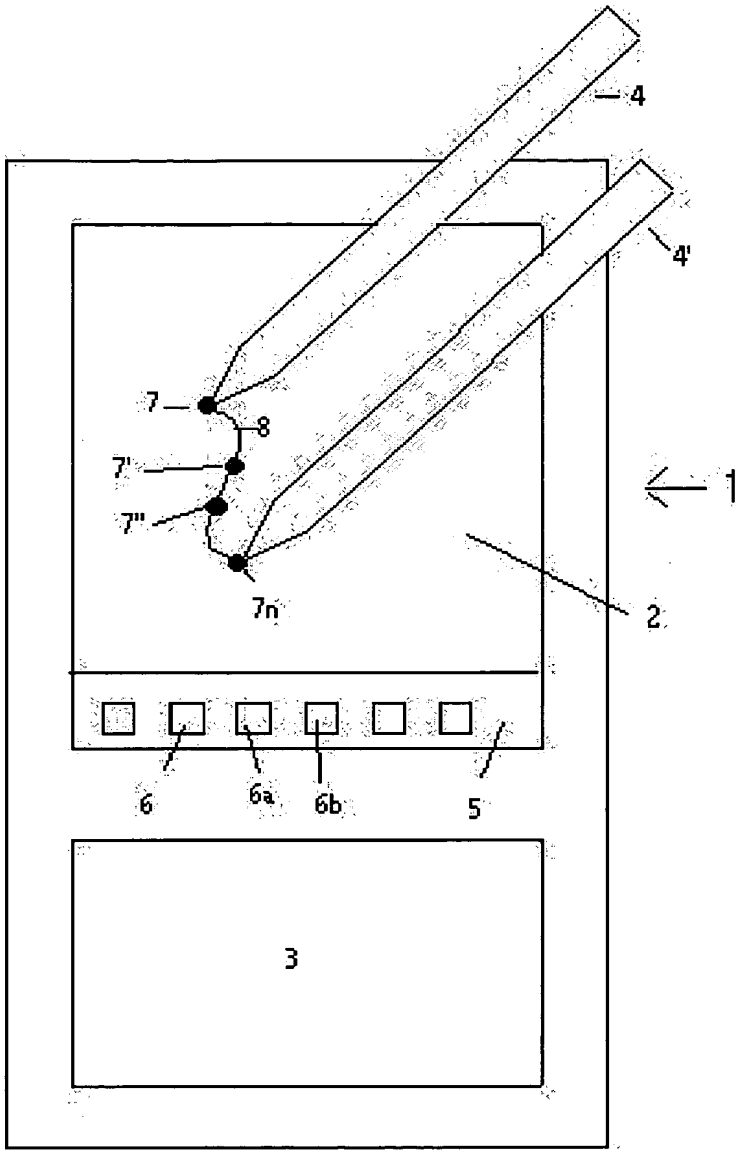

Fig. 1

Table 1	
Relation	**Formula**
Linear	$y = m(x-h) + k$
Quadratic	$y = a(x-h)^2 + k$
Circle	$(x-h)^2 + (y-k)^2 = r^2$
Ellipse	$(x-h)^2/a^2 + (y-k)^2/b^2 = 1$
Hyperbola1	$(x-h)^2/a^2 - (y-k)^2/b^2 = 1$
Hyperbola2	$(y-k)^2/b^2 - (x-h)^2/a^2 = 1$
Parabola1	$y = a(x-h)^2 + k$
Parabola2	$(y-k)^2 = c(x-h)$
Exponential1	$y = b \cdot a^x + k$
Exponential2	$y = b \cdot e^{ax} + k$
Logarithmic	$y = b \cdot \ln(a(x-h)) + k$
Power	$y = a(x-h)^r + k$
Sine	$y = b \cdot \sin(a(x-h)) + k$
Cosine	$y = b \cdot \cos(a(x-h)) + k$

Fig. 2

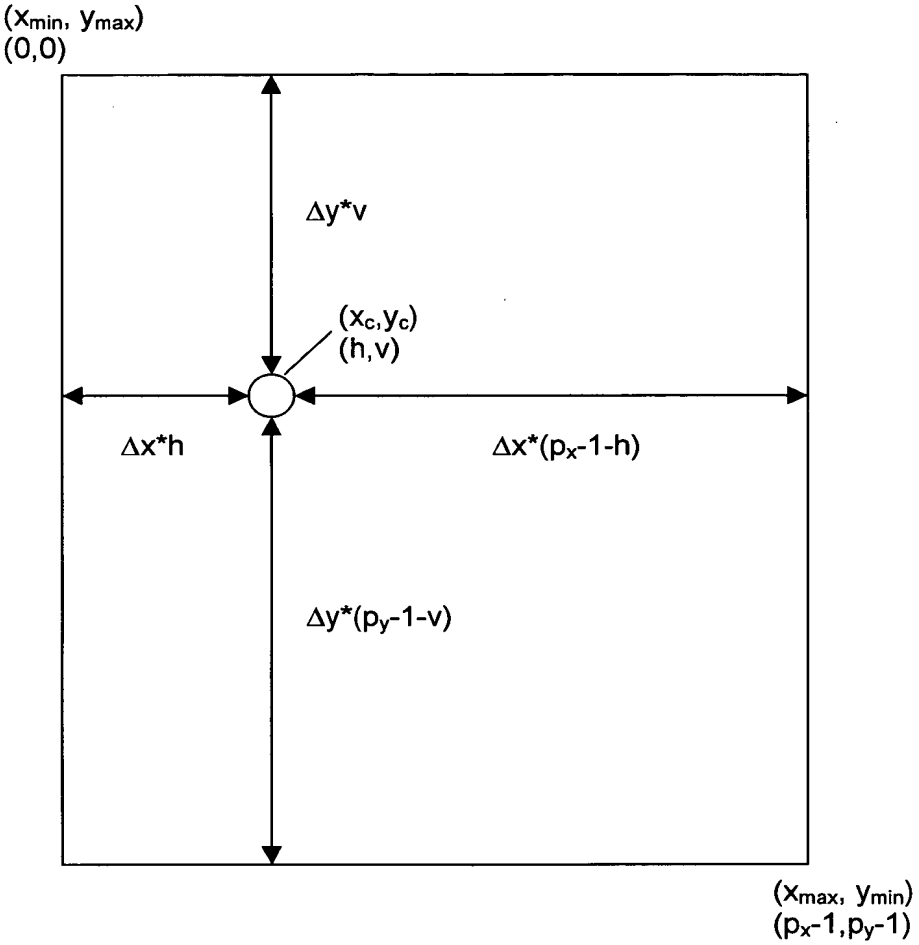
(x_{min}, y_{max})
(0,0)
Δy^*v
(x_c,y_c)
(h,v)
Δx^*h
$\Delta x^*(p_x-1-h)$
$\Delta y^*(p_y-1-v)$
(x_{max}, y_{min})
(p_x-1,p_y-1)

Fig. 3

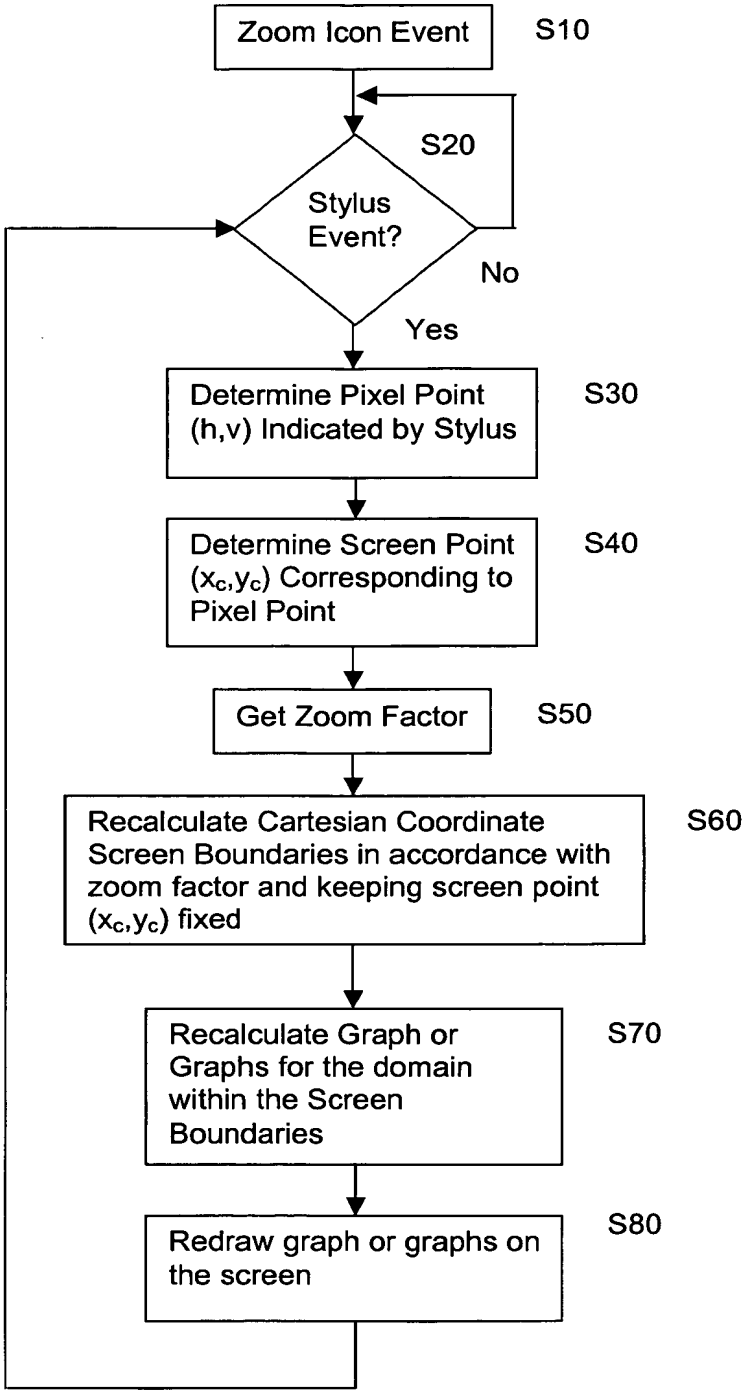
Zoom Icon Event
S10
S20
Stylus Event?
No
Yes
Determine Pixel Point (h,v) Indicated by Stylus
S30
Determine Screen Point (x_c,y_c) Corresponding to Pixel Point
S40
Get Zoom Factor
S50
Recalculate Cartesian Coordinate Screen Boundaries in accordance with zoom factor and keeping screen point (x_c,y_c) fixed
S60
Recalculate Graph or Graphs for the domain within the Screen Boundaries
S70
Redraw graph or graphs on the screen
S80

Fig. 4

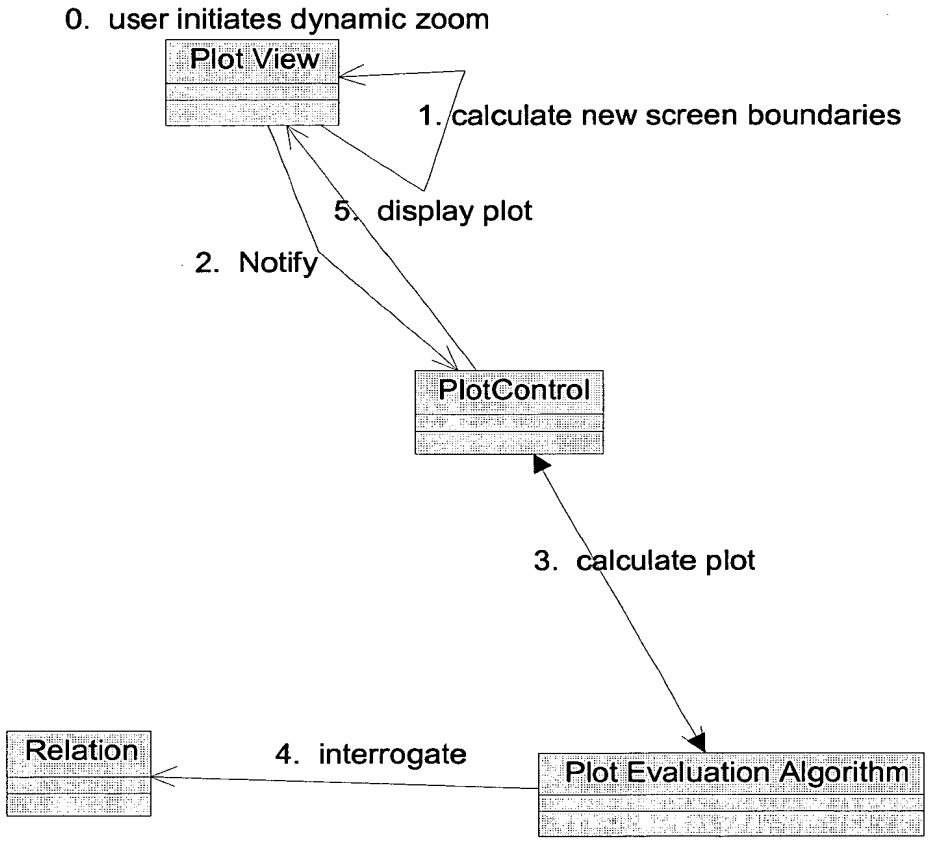
0. user initiates dynamic zoom
Plot View
1. calculate new screen boundaries
5. display plot
2. Notify
PlotControl
3. calculate plot
Relation
4. interrogate
Plot Evaluation Algorithm

Fig. 5

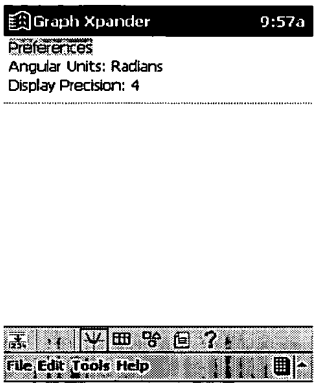

Fig. 6

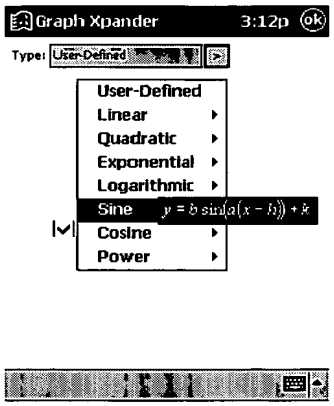

Fig. 7

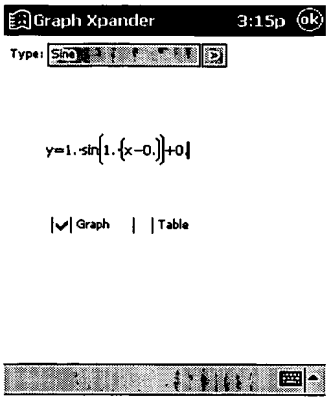

Fig. 8

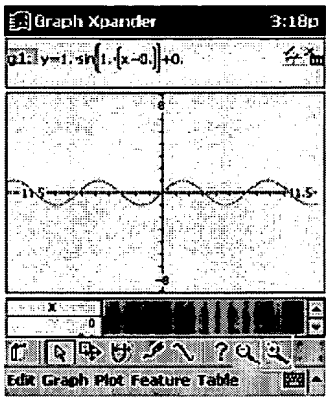
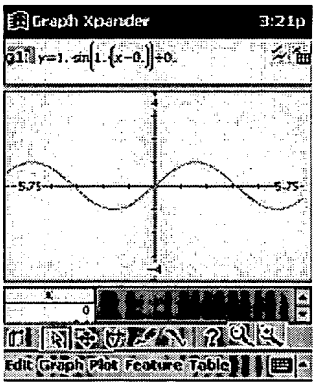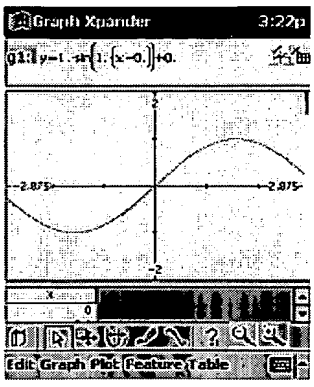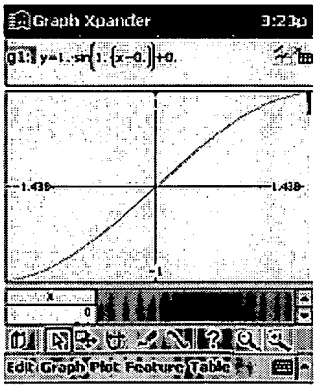
Fig. 9